Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method for synthesizing a nucleic acid probe array, comprising the steps of:

(1) providing a substrate;

(2) providing nucleotides or nucleosides that are protected by a photo-protecting group;

(3) directing a light beam onto an input end of a plurality of optical fiber elements, wherein an output end of each optical fiber element is disposed ~~operatively couples to~~ in a well of an interface element that mechanically aligns ~~an~~ the output end of the optical fiber element with an area for synthesizing a probe feature on the substrate;

(4) selectively switching one or more of the optical fiber elements between substantially light-passing and substantially light-not-passing states in response to gating data, resulting in a first set of one or more optical fiber elements in the substantially light passing state;

(5) disposing light passed through the first set of optical fiber elements onto each corresponding aligned area to provide a reactive group; and

(6) contacting the nucleotides or nucleosides with the reactive group.

2. (Previously Presented) The method of claim 1, wherein:

light passed through at least one optical fiber element in the substantially light-passing state strikes each corresponding aligned area of the substrate, thereby activating each aligned area.

3. (Original) The method of claim 1, wherein:

the light beam includes ultra-violet light.

4. (Previously Presented) The method of claim 1, wherein:

the plurality of optical fiber elements each comprise one or more optical fibers or one or more segments of optical fibers.

5. (Currently Amended) A method for aligning one or more optical fiber elements with an area for synthesizing a probe feature on each of one or more substrates, comprising the steps of:

(1) directing a light beam onto a input end of one or more optical fiber elements, wherein an output end of each optical fiber element is disposed ~~operatively couples to~~ in a well of an interface element that mechanically aligns ~~an~~ the output end of the optical fiber element with an area for synthesizing a probe feature on each of the one or more substrates;

(2) selectively switching one or more of the optical fiber elements between substantially light-passing and substantially light-not-passing states in response to gating data, resulting in a first set of one or more optical fiber elements in the substantially light passing state; and

(3) disposing light passed through the first set of optical fiber elements onto each corresponding aligned area.

6. (Previously Presented) The method of claim 5, further comprising the step of:

(4) activating each aligned area of the substrate responsive to step (3).

7. (Previously Presented) The method of claim 6, wherein:

light passed through each optical fiber element in the first set strikes each corresponding aligned area of the substrate, thereby activating each aligned area.

8. (Previously Presented) The method of claim 7, further comprising the step of:

(5) providing linker molecules on the substrate, wherein the linker molecules include a reactive functional group protected with a photo-removable protective group; and wherein step (4) includes exposing the photo-removable protective groups to light in each aligned area of the substrate, thereby removing the photo-removable protective groups from the linker molecules and exposing the reactive functional groups in each aligned area.

9. (Original) The method of claim 8, further comprising the step of:

(6) contacting the exposed reactive functional groups with first monomers capable of reacting with the exposed reactive functional groups.

10. (Original) The method of claim 9, wherein:

the first monomers include a nucleotide, nucleosidc, amino acid, or saccharide.

11. (Original) The method of claim 9, wherein:

the first monomers include a reactive functional group protected with a photo-removable protective group.

12. (Previously Presented) The method of claim 11, further comprising the steps of:

(7) selectively switching one or more of the optical fiber elements between substantially light-passing and substantially light-not-passing states in response to the gating data, resulting in a second set of onc or more optical fiber elements in the substantially light passing state, whercin light passed through each optical transfer element in the second set strikes each corresponding aligned area of the substrate, which may be the same as or different than thc one or more aligned areas corresponding to the first set, thereby activating the second set of aligned arcas; and

(8) contacting exposed reactive functional groups of the linkcr molecules or of the first monomers with a second monomer, which may be the same or different than the first monomer, capable of reacting with exposed rcactive functional groups of the linker molecules or of the first monomer and having a reactive functional group protected with a photo-removable protcctive group.

13. (Previously Presented) The method of claim 5, further comprising the step of:

(4) deactivating the aligned areas of the substrate corresponding to the first set responsive to step (3).

14. (Previously Presented) The method of claim 13, wherein:

light passed through each optical transfer element in the first set strikes each corresponding aligned area of the substrate, thereby deactivating each aligned area.

15-52 (Cancelled)

53. (Currently Amended) One or more arrays of biological probes disposed on one or more substrates, wherein the arrays are synthesized by a method comprising the steps of:

(1) directing a light beam to a input end of a plurality of optical fiber elements, wherein a output end of each optical fiber element is disposed ~~operatively couples to~~ in a well of an interface element that mechanically aligns ~~an~~ the output end of the optical fiber element with an area for synthesizing a probe feature on each of the one or more substrates;

(2) selectively switching one or more of the optical fiber elements between substantially light-passing and substantially light-not-passing states in response to gating data, resulting in a first set of one or more optical fiber elements in the substantially light passing state;

(3) disposing light passed through the first set of optical fiber elements onto each corresponding aligned area, thereby activating each aligned area; and

(4) coupling monomers onto each aligned area.

54. (Original) The arrays of claim 53, wherein the method further comprises the steps of:

(4) processing customer orders for synthesized probe arrays to provide probe and array configuration data indicative of at least one probe array sequence;

(5) processing the probe and array configuration data to provide probe array design data; and

(6) processing the probe array design data to provide the gating data.

55. (Currently Amended) The method of claim 5, wherein:

the interface element comprises a plurality of wells, wherein each well comprises tapered walls to operatively couple with the output end of one ~~or more~~ of the optical fiber elements.

56. (Currently Amended) The method of claim 55, wherein:

each of the one or more optical fiber elements comprise tapered output ends, wherein the tapered output ends are complementary to the tapered walls of the wells.